

REMARKS

Claims 1-49, 55, 57-61, 64-68, 73 and 77-92 are pending. By this Supplemental Amendment, claims 73, 86 and 92 are amended with regard to the angle Δ . Should any fees be necessary to effect entry of this response, the Patent Office is authorized to charge Deposit Account No. 03-3975, under Order No. 009919/0265136.

In the January 22, 2002 Office Action, a number of prior art rejections are presented under 35 U.S.C. §§ 102(b)/103(a). In particular, claims 40, 41, 45-59, 76 and 81-84 were rejected under 35 U.S.C. §§ 102(b)/103(a) over Yasui; claims 42 and 43 were rejected under 35 U.S.C. § 103(a) over Yasui; claim 55 was rejected under 35 U.S.C. § 103(a) over Marier; claims 60 and 61 were rejected under 35 U.S.C. § 103(a) over Preble; and claim 73 was rejected under 35 U.S.C. § 103(a) over Trautwein.

To determine whether the subject matter of an invention is unobvious over the prior art, courts consider (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art, and (4) any objective indicia of non-obviousness. See *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). Various objective indicia of non-obviousness, which, if proven, must be considered by the Patent Office, include: (1) evidence of unexpected results or properties of the claimed invention; (2) the commercial success of the patented invention; (3) a long felt but unsolved need in the art for the solution of the invention; (4) the failure of others to solve the problem; (5) copying by competitors (the infringer) of the claimed invention; (6) showing of industry respect for the patent (i.e. licensing thereof); and (7) skepticism expressed by skilled workers in the field as to a solution to the problem presented before the invention was made. See *In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998) (citations omitted). 'Evidence of [such] secondary considerations . . . may . . . establish that an invention appearing to have been obvious in light of the prior art was not.' *Alco Standard*

Corp. v. Tennessee Valley Auth., 808 F.2d 1490, 1500 (Fed. Cir. 1986) (citations omitted). However, a clear unmistakable connection is required between the attributes of the invention and the secondary considerations. See e.g., *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1384 (Fed. Cir. 1997); *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1394, 7 USPQ2d 1222, 1226 (Fed. Cir. 1988).

Attached hereto is a Declaration Mr. Robert Handfield, the project manager for the subject matter disclosed in this application, showing that the claims of the present application which are currently rejected over prior art include non-obvious features that make them commercially successful. Those same features are ones that were against conventional thinking in the snowmobile art, as stated in various ones of the Exhibits supporting Mr. Handfield's Declaration. See for example, Exhibit D, page 23:

"... When Ski-Doo went one step further and moved the heaviest component on a snowmobile forward (the driver), then moved the engine rearward, they struck a new chord in the business. The moving of the riders' weight forward in the chassis into what is most easily described as an ATV/motorcycle posture, changed longstanding ergonomic rules common to all current snowmobiles."

This evidence was not earlier presented because it only recently became available since the initial release of the "REV" in late December 2001. Various aspects of the "REV" are the subject matter of the present application.

Accordingly, for those claims rejected under Section 103(a), the Patent Office is required to consider the attached Declaration and supporting exhibits, which constitute "objective evidence of non-obviousness." The Exhibits referred to in Mr. Handfield's Declaration demonstrate (1) the commercial success of the claimed invention; (2) evidence of unexpected results or properties of the claimed invention; (3) a long felt but unsolved need in the snowmobile art for the solution of the invention (e.g., moving the rider and/or steering device forward and/or the footrest rearward, to position the rider and/or passenger into a more

active position); (4) the failure of others to solve the problem; and (5) industry respect for the REV. Moreover, there is a clear nexus between what is claimed and the reasons why the REV is commercially successful.

In addition, the Declaration includes information which the Patent Office should consider in relation to the rejection set forth under 35 U.S.C. §112, first paragraph. In particular, paragraphs 46 and 47 of the Declaration explain how the drawings originally filed with the application were schematic in nature, but that one of ordinary skill in the art, such as Mr. Handfield, would have understood how to make a fully operational and steerable snowmobile according to what is described in the present specification and shown in the original drawings.


Finally, paragraphs 44 and 45 of the Declaration describe that one of ordinary skill in the art would not have provided Yasui with a "tunnel", as recited in claim 88, which depends from claim 40.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned "Version with markings to show changes made".

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, he is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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PTB/jck
Enclosures:
Appendix
Declaration with Exhibits

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend claims 73, 86 and 92, as follows:

73. (Thrice Amended) A snowmobile, comprising:

a frame;

a straddle seat disposed on the frame;

an engine disposed on the frame in front of the seat;

two skis disposed on the frame;

a steering device disposed on the frame and operatively connected to the two skis for steering the snowmobile; and

right and left sideboards extending laterally from the frame below the seat on either side thereof, each of the sideboards having a forward portion suitable for placement of a rider's foot thereon, the forward portion of each sideboard disposed at an angle Δ with horizontal that is -5° to -10° ; and

right and left toe-holds disposed respectively above the rider's toes in a vertical plane for allowing the rider to releasably secure himself to the snowmobile.

86. (Amended) A snowmobile, comprising:

a frame;

a straddle seat disposed on the frame;

an engine disposed on the frame in front of the seat;

two skis disposed on the frame;

right and left sideboards extending laterally from the frame below the seat on either side thereof, each of the sideboards having a forward portion disposed at an angle Δ with horizontal that is -5° to -10° ; and

right and left toe-holds associated with the right and left sideboards to allow the rider to releasably secure himself to the snowmobile.

92. (Amended) An assembly comprising:

a frame including a tunnel;

a straddle seat mounted on the frame;

an engine disposed on the frame in front of the seat;

two skis disposed on the frame;

a steering shaft operatively connected to the two skis, the steering shaft being disposed over the engine at an angle ϵ of between 25° and 40° from vertical;

wherein the tunnel supports a drive belt coupled to the engine and defines a footrest on each side of the seat that is inclined at an angle Δ with horizontal that is between 0° to $[-5^\circ]$ -10° ; and

wherein a forward-most axle of the drive belt is positioned rearward of the steering device.

End of Appendix

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF

GIROUARD et al.

Appln. No.: 09/472134

Filed: December 23, 1999

Title: SNOWMOBILE

Group Art Unit: 3618

Examiner: Anne Marie Boehler

Confirmation No.: 8367

* * * * *

DECLARATION OF ROBERT HANDFIELD UNDER 37 C.F.R. § 1.132

I hereby declare that:

1. I was the project manager for the "REV" snowmobile, aspects of which are covered in the above-identified application.
2. I graduated from Polytechnic, Montreal University in 1990, with a degree in Mechanical Engineering.
3. I have 9.5 years of experience in the field of designing snowmobiles.
4. I have been employed by Bombardier, Inc., the assignee of the above-identified application, for 9.5 years.
5. I have read and understand the application and now Pending Claims in the above-identified patent application. The Pending Claims are attached as Exhibit A.
6. I have also reviewed the following articles, which are contained within the indicated attached Exhibits:

Exhibit B: Snowmobile Lifestyle – Adventure – Sport, "Let The Revolution Begin, REV – Chassis Machines Changes Ride Style", Spring, 2002, pages 30-31.

Exhibit C: SnoWest, "2003 Sneak Preview", March, 2002, Vol. 29, No. 3, page 42.

Exhibit D: Atlantic Snowmobiler – The Magazine For Maritime Snowmobilers, "All About 2003 and Beyond What We Know, What We Think We Know and Some Informed Guessing", pages 6-7 and "World premiere of SKI-DOO's REVOLUTION", pages 22-24, Vol. 10, No. 4, April 2002.

Exhibit E: SnowGoer – World's #1 Snowmobile Magazine, Advertisement entitled "We've done it.", March 2002.

Exhibit F: SUPERTRAX International, "Changing It All! Ski-Doo's 2003 Lineup Raises Some Eyebrows about the Future", pages 34-37, and "Riding The REV – Here's What We Think After 100 Miles", pages 42-44, Vol. 13, No.5, June 2002.

Exhibit G: SnowWeek – The Snowmobile Racing Authority, advertisement entitled "15 Wins for us. (And 2 for the other 3 manufacturers to fight over)"; "Bond, James Bond", page 6; "Racing is in your blood. Winning is in ours", Vol. 29, No. 15, April 1, 2002.

Exhibit H: SnowWeek – The Snowmobile Racing Authority, "One for the ages – The MX Z REV: Not your Dad's Machine", page 15, Vol. 29, No. 14, March 25, 2002.

Exhibit I: SnowWeek – The Snowmobile Racing Authority, advertisement entitled "Grand Slam!"; "Ski-Doo Offers More in 2003", pages 18 and 19, Vol. 29, No. 13, February 25, 2002.

Exhibit J: SnowWeek – The Snowmobile Racing Authority, "MX Z REV Redefines the Sport", pages 20-21, Vol. 29, No. 12, February 18, 2002.

7. Bombardier's "REV", short for "revolution" is the primary snowmobile mentioned in Exhibits B-J, and is the subject matter covered in the above-identified application.
8. The articles attached as Exhibits B-J accentuate features that, at least in part, make the REV commercially successful. In summary, the articles overwhelmingly support the notion that the REV is anything but conventional since it completely redefines the manner in which a rider is positioned on the snowmobile. For example, Exhibits B-J point out the following advantages: 1) the rider is moved to a new position that accomplishes the goal of "mass centralization" better than any other snowmobile since the rider's center of gravity is closer to the snowmobile's center of gravity – a concept that was completely counterintuitive in the snowmobile art; 2) most of the weight of the snowmobile is moved toward the machine's center of gravity, which offers the best handling characteristics; 3) the REV allows the driver to stand easier when encountering bumps on the trail because thigh muscles rather than arm muscles are used primarily –therefore the bumps have less

impact on the driver; 4) the engine is moved back (e.g., 2.6 inches) and down (e.g., 1.25 inches); 5) the steering post is move above the engine rather than behind it; 6) the footrests of the snowmobile are positioned such that the rider's feet are slightly rearward of the center of gravity of the vehicle; 7) the footrests are downwardly inclined such that the rider's feet are toe-down, which facilitates the ability of the rider to raise off the seat; 8) a passenger can be positioned in a more comfortable position; and 9) the rider's view of the trail is improved due to the forward seating position.

9. I will now identify those portions of Exhibits B-J that relate to the claim features described below in paragraphs 29-43. I have provided underlining for emphasis.

10. Exhibit B, page30:

"The new REV is different in a good way. It changes the way a driver sits, leans and rides a snowmobile. Everything conventional about snowmobile ergonomics was re-thought and reworked into a nifty package. The new design moves most of the weight toward the machine's center of gravity, which offers the best handling characteristics. It also moves the rider 12 inches farther forward than traditional snowmobile configurations, and the driver's knees bend at a 90-degree angle. The design allows a driver to stand easier when encountering nasty bumps on the trail. The shift in driver position was a part of a whole chassis redesign. . . . [The engineers] set goals that included better ergonomics; more chassis rigidity; more mass centralization; a new front suspension; easier access to mechanical parts; and weight reduction and met them straight on. . . . The new chassis design allowed engineers to move the engine back 2.6 inches and down 1.25 inches compared to the ZX chassis. The steering post is now above the engine rather than under and behind it."

11. Exhibit B, page 31: "In The Real World – Climbing the REV, drivers notice the new layout and ergonomics immediately. With the shift forward and knees at a 90-degree angle it takes some time to get accustomed to the new position. Drivers quickly learn that simply leaning out when bolting around corners is not the most efficient. Not in this setup. On the REV, leaning forward and out is the way to go. It takes a few turns to get this down, but once in the groove it's second nature and feels more natural. Standing to absorb the bumps on the trail takes little effort. It's simple as standing up from sitting in a chair. Thigh muscles do all the work: Drivers will feel it after the ride. But bodies will adjust to the new way of riding."

12. Exhibit C, page 42:

"The latest is Ski-Doo's new REV platform, home of the MX Z (X package – spring only – and Sport package). There are a lot of unique features about this trail sled, but one of the most interesting is the driver positioning. It's pretty much unlike anything you're familiar with, at least sled wise. And it definitely takes some getting used to. . . . The seat position practically forces you to ride right up front. That helps keep the center of gravity low and right in the middle of the machine, improving handling immensely. The rider sits 12 inches more forward the front of the sled than on a conventional machine.

Those two areas were part of the goal of Ski-Doo when designing the sled – New ergonomics and mass centralization. To help on obtaining the lower center of gravity, the motor has been moved 2.6 inches back and 1.25 inches lower. The other goal was to reduce weight."

13. Exhibit D, page 6:

"Clearly the excitement surrounding model year '03 started early when Ski-Doo pulled the sheets off their revolutionary "Rev" chassis one week before Christmas. . . .

Here's the real issue which you'll be hearing more about in the coming months. It's the latest industry catch phrase – centralized mass. It means the modern snowmobile will have all of its heaviest components shoved closer together and positioned - ideally – as close as possible to the theoretical center of the sled. Centralized mass has many benefits but the most important is the improvement in handling and ride quality which comes as a result of keeping the heavy pieces close together. Of note is Ski-Doo's innovative use of the rider's weight to enhance the effect of mass centralization. This may be one of this season's most important technical details."

14. Exhibit D, page 7, inset photo of the REV:

"By the beginning of next season we guarantee you'll be sick of hearing the OE's talking about centralized mass. In any case, the Rev pictured here demonstrates this design extremely well. Look closely at the relationship of the engine and tranny package to the handlebars and the rider's footrests. The effect the change in these critical positions has on the way the sled rides is so dramatic, the Rev feels like no other snowmobile we've ever ridden."

15. Exhibit D, page 22-24:

"... If the reality of the sno-mo-marketplace is that new customers are really competitor's customers then what we're about to show you may be the boldest, most radical, and potentially risky move ever made by the snowmobile manufacturer [Bombardier, the manufacturer of the REV]. ... The REV is so different, so unusual, it's possible many riders will find it, like we did – sorta strange – at first. ... The Rev employs three foundational design elements which are the basis for the "Revolution" chassis. They are:

- 1) Improved rider ergonomics; 2) Centralized mass; and 3) Reduced weight.

These hallmarks are the reason the Rev looks so unusual and rides so dramatically different than anything we've ever tested.

Looking closely at Arctic Cat's new ZR 440 Sno-Pro chassis . . . you'll notice that it addresses two of the Rev's three design parameters. The AC platform reduces weight and centralizes mass but has not altered basic snowmobile ergonomics, so familiar to all of us who ride. When Ski-Doo went one step further and moved the heaviest component on a snowmobile forward (the driver), then moved the engine rearward, they struck a new chord in the business. The moving of the riders' weight forward in the chassis into what is most easily described as an ATV/motorcycle posture, changed longstanding ergonomic rules common to all current snowmobilers. By moving the entire weight of the rider to the middle of the sled, Ski-Doo accomplished two unrelated but very important goals. First, centralizing chassis components, as Arctic Cat has done is honourable if the design goal is to achieve centralized mass. Unfortunately, the heaviest piece of the modern snowmobile is still [the driver]. Ski-Doo ached the equation and achieved dramatic benefits from moving the rider's weight forward and did it without spinning the engine around backwards. . . .

The second effect of moving the rider forward is possibly the most revolutionary piece of the REV puzzle. Here's why. When riding through bumps, all snowmobile ergos require the rider to pull his or her body off the seat with a muscular action origination largely in the rider's arms. The Rev, because of its radical altering of the riding position, allows the rider to simply stand up when bumps deepen. This dynamic change in rider posture is at first somewhat disconcerting. However, once we realized this is exactly the way we react when riding an ATV or dirt bike, we began to feel more comfortable. After an hour of riding the Rev, the weirdness we first felt melted into a comfortable and very

aggressive posture which allowed bumps and rough trail to be covered with outright abandon. In fact, this pilot has never thrashed through whoops with the confidence and speed I did when planted on the new Rev.

Here's another reason why the Rev allows rough terrain to be swallowed voraciously. With the rider's feet positioned at precisely the centre of "polar moment of inertia" of the vehicle, the teeter-tottering effect which lifts your butt off the seat in rough terrain on a normal sled is diminished dramatically. . . .

. . . Here's another thing that looks odd but works. The seating position of the rider places his or her feet in a toe down rather than toe up position. While this looks strange, it feels right and wouldn't you know it, it's the same way you sit on an ATV or dirt bike."

16. Exhibit D, page 23, inset photos (top left and right):

"Using the handlebar end as a constant, observe the difference in component placement between the new Rev and the current ZX chassis. 1) The riders knees. 2) The riders feet. 3) The secondary pulley in relation to the riders knees and hands. 4) The primary clutch bolt to the riders hands. 5) the handlebar pole in relation to the engine. Dramatic differences here become dramatic improvements in ride and handling."

17. Exhibit E, pages 34, 35 and 37:

"Ski-Doo's new REVolution chassis will soon change the way everyone thinks. Get ready for it. You don't have to like the way it looks – because it does look different. You may be resistant to change for the sake of change – asking if anyone really needed an answer to this question. You may not even like Ski-Doos for no other reason than that they're Ski-Doos. However, after one ride on the new REV your attitude about what a snowmobile should be like will change forever.

What is this thing all about? The theory behind Bombardier's design is to centralize all the mass into the middle of the sled. This includes the engine and drive system, gas tank and most importantly, the driver. The most compelling observation about the A-arm REV, when viewed without its plastic cladding, is that not only is the engine moved rearward in the chassis as we've seen all the manufacturers do recently with their snocross sleds, but the driver has been moved radically forward too. As a matter of fact, the REV's riding position is so far forward, you could put a second passenger behind the driver and they'd still be no further rearward than they'd be when seated in the driver's seat on a regular snowmobile.

The net result is like nothing else. Because of the rider's far-forward seating posture (you're actually sitting right above the front arm of the skid frame), the bumps have less leverage and make less impact on the driver. . . . You can ride the REV faster, on garbage trails, with less pain than any other sled. Handling is excellent once you get accustomed to the different inputs you'll need to rail corners. Everything else is pure snowmobile. All the feedback into your senses is similar to what you're been used to.

Leadership

It's tough to deny that Ski-Doo is showing strong leadership in the industry. . . . It takes raw courage to obsolete products which have been nothing short of excellent in the past. Perhaps the best Ski-Doo snowmobiles ever built are the ZX bodied ones offered in 2002 and 2003. To fold and spindle those sleds and replace them with the REV platform over the next few years is a bold, brave move. Some would say insane. The only sensible explanation is that they have something better to offer. Over the next year, as snowmobilers sample the new REV, they will come to see the logic in Ski-Doo's

transition. The REV is more than just a good concept, we think it might be the snowmobile of the future."

18. Exhibit E, page 43:

"It's almost impossible to gain an accurate appraisal of the REV without riding it for an extended period. It's so different it changes all our impressions as to how a sled should behave. Furthermore, it has so many technical changes and innovations, conventional thinking has to have time to adapt.

Feels Different

To begin with, the rider's seating position is much further forward than on any other sled ever. Your feet are curled up underneath you so you're actually seated in kind of a crouched position. . . . You're butt is actually positioned over the front arm of the suspension and sitting-to-standing transitions are so much easier from the crouch position that you can instantly prepare for trail hits. Truth is, you're not getting the big hits like you do on a conventional sled anyway. Because you're seated so far forward, the leverage of trail bumps is lessened and [your] body is only absorbing a fraction of the impact you'd get if you were sitting closer to the rear like on a "normal sled. . . .

How They Got There

Chassis stiffness and centralized mass are the two concepts which have been integral to the evolution of the REV from day one. . . . The engine is mounted further back (about 2 inches) and down a bit lower and the airbox has been relocated to the side panel of the hood instead of directly behind the carbs. . . . Ski-Doo has taken this 'ball of mass in the middle of the sled', concept further than anyone else and it makes the REV very stable when turning or riding over rough terrain.

Like a Bike

... Looking out over the hood, you're suddenly aware you're right out there on the front of the sled. There's very little hood showing but the view of the trail is panoramic and the Precision Skis are completely visible. ...

Talk Won't Do It

... There's no question [the REV] will cause much chin scratching and postulating about whether or not it belongs in snowmobile's future. Converts will be won over, one at a time. They'll ride it and they'll know ... because the proof is in the riding. It's this easy: ride it and you can't deny it's better."

19. Exhibit E, page 43 (inset photos):

"Here's an interesting comparison between the REV and the ZX. Note the rider's seating position in relation to the two yellow idler wheels in the skidframe. Also, check out where the engine's cylinder heads are in relation to the steering head. How about the proximity of the rider's shin to the secondary clutch?"

20. Exhibit F (Advertisement):

"Overview

'The REV could be the most significant advancement in the riding experience since the introduction of the Independent Front Suspension. The REV platform marks a new era in snowmobile interaction between the rider and machine.' ...

Riding Position

Some riders will be impressed with the new front suspension, or the futuristic look of the machine. This sled is all about the rider position – it changes the way the rider interacts with the vehicle. The REV truly takes snowmobiling to a new level....

Because you're seated so far forward, the leverage of the trail bumps is lessened and your body is only absorbing a fraction of the impact you'd get if you were sitting closer to the

rear like on a normal sled....

You quickly discover having your knees under you is a huge advantage on a shelled-out trail and posting for the bumps has never felt more natural than on this very different Ski-Doo....

Suspension & Ride...

The feeling of control, because of where the weight is, is what was most impressive. I wasn't sore after riding this sled for over a hundred miles!!...

The sled is technically fascinating, but the startling new ergos are what makes the REV such a quantum change for snowmobiling....

Ski-Doo has taken this 'ball of mass in the middle of the sled' concept further than anyone else and it makes the REV very stable when turning or riding over rough terrain.

The REV will turn like it's on rails and because of the stiffness of the chassis and the compliance of the A-frames the skis will stay glued down with virtually no ski-lift....

REvolution

The REV is so totally different that Bombardier can rightfully claim they've re-invented the snowmobile....

The tall, driver-forward design might be the biggest change in the snowmobiling experience since this company rolled out the rider-over-tunnel concept in 1959....

This snowmobile will affect the industry in a very positive way – future machines will be influenced by it. The REV takes convention 'in the box' thinking and tosses it out the window – it's the next step in sled evolution...."

21. Exhibits G-J are copies of articles from SnowWeek, a weekly publication covering snowmobile racing. Exhibits G and I are indicative of the REV's acceptance and dominance in the snowmobile racing industry. The reasons for acceptance and

dominance are due, at least in part, to the features recited above, in which the rider's positioning on the REV is radically changed from the norm.

22. Exhibit G includes a first advertisement stating that "the new MX Z REV completely dominated, winning 15 of the 17 races it started." Exhibit G includes a second advertisement stating that the MX Z won "12 of 14 victories in WSA and Indoor Circuit Pro Open events. Dominating wins by six different riders, ...".
23. Exhibit G, page 6, includes a short article entitled "Bond, James Bond", in which it is indicated that the MX Z REV will be featured in the next James Bond movie. It is a great honor that the REV was selected to be in the Bond movie – a hallmark of product innovation.
24. Exhibit H, page 15 states:
- "After throwing a leg over for the first time, we weren't ready (or accustomed) to the new seating position. After putting countless miles on it at Rode Reports most everyone who piloted it enjoyed the experience."
25. Exhibit I includes an advertisement stating:
- "Four races, four Ski-Doo X-Team victories and one radical sled. The MX Z-REV. That's all you need to know about last weekend's Open Class competition. In Vernon, New York, Justin Tate won the WSA Semi-Pro heat, Curt Peterson flew across the finish line first. Back in Motown, Pro Open ace Blair Morgan and Semi-Pro X-Teamer Steven Taylor stormed in to the Pontiac Silverdome and blew everyone out in the Super Sno-Cross Series. Fact is, this sled hauls just about anyone who rides it to victory."
26. Exhibit I, page 18:
- "There's a ton of new things coming from Ski-Doo that will make any snowmobiler drool. Model year 2003 will go down as one of the most forward-thinking years in

[snowmobiling], and Ski-Doo is one of the manufacturers leading the charge. The company first teased us with its new REV platform that redefined rider placement on a sled. The REV moves riders 12 inches farther forward on the machine, and moved the majority of the weight toward the sled's center of gravity."

27. Exhibit J, page 18:

"Ski-Doo's newest creation in snowmobiles throws conventionalism to the wind.

For the 2003 model year, Ski-Doo offers a unique way of riding a snowmobile with its new MX Z REV platform.

The REV (short for Revolution) takes everything conventional about snowmobile ergonomics and takes it one step further. The new design moves riders 12 inches farther forward than traditional snowmobile configuration. Instead of having their legs stretched in front, the driver's knees bend at a 90-degree angle. The design allows a driver to stand easier when encountering nasty bumps on the trail.

The new design moves most of the weight toward the machine's center of gravity, which offers better handling characteristics. The shift in driver position was a part of the whole chassis redesign. . . .

The new chassis design allowed engineers to move the engine back 2.6 inches and down 1.25 inches compared to the ZX chassis. . . .

28. Exhibit J, page 21:

"Overall, the MX Z REV offers something completely different. While it takes a few miles to adjust to the new riding position, once accustomed to it, the ride is more comfortable and feels natural. The REV feels more stable barreling around sweepers and standing when encountering craters on the trail is simple."

29. The main challenge in designing the REV was to enhance performance of the snowmobile as well as comfort to the rider. As evidenced by the Exhibits, we addressed this challenge by repositioning the rider and the components on the snowmobile in manners that were against conventional thinking in the snowmobile art.
30. Claims 40-43, 45-49, 55, 60, 61, 73 and 81-84 in the above-identified application contain features that relate to positioning the seat, steering device and/or footrests so as to allow the driver to assume the unique position described in the application as well as the Exhibits. There is a direct connection between what is claimed and the advantages that make the REV commercially successful.
31. Each of claims 40, 45, 81 and 82 recites a snowmobile comprising a steering device disposed on the frame and spaced forward of the seat such that, when the rider grasps the steering device in the standard position (in which the rider straddles the seat while the snowmobile is heading straight ahead on flat terrain), the rider's torso is tilted toward the steering device and the rider's arms extend toward the steering device with the rider's elbows substantially over the rider's feet. The result of the claimed arrangement is that the rider is in a more active riding position. This is in sharp contrast to conventional arrangements which resulted in a rider in a laid back or passive riding position.
32. Each of claims 40, 45, 81 and 82 defines ranges for angles α (alpha), β (beta) and/or γ (gamma), all of which relate to the relative positioning between the seat position, the steering position and the footrest position. Claims 41-43 define even more advantageous ranges for the angles. These angles were specifically selected to allow the rider to assume an active riding position that results in the advantages mentioned in the specification and Exhibits B-J.

33. By positioning the seat position, footrest position and the steering position with the angle ranges recited in claims 40-43, 45, 81 and 82, a number of advantages can be achieved, as mentioned in the specification of the above-identified application. For example, 1) the seat position is moved closer to the center of gravity of the snowmobile, which improves handling and comfort since bumps are not transferred to the driver with the same magnitude as in the prior art; 2) the footrest position is such that a rider can easily raise himself from the seat using primarily the strength of only his legs; 3) the rider can maintain greater control over the snowmobile since the legs and not the arms are used to negotiate bumps; 4) the rider's feet are more in line with the torso and center of gravity; 5) the rider's view is improved since less of the snowmobile fairings and/or windshield is in the path; 6) the space for the steering device, e.g., the handle bar, is less likely to interfere with the rider's knees since the steering position is moved forwardly; and/or 7) the ride for a passenger, if any, is improved.
34. Claim 46 recites a snowmobile comprising a steering device disposed on the frame and spaced forward of the seat such that, when the rider grasps the steering device in the standard position (in which the rider straddles the seat while the snowmobile is heading straight ahead on flat terrain), the rider's torso is tilted toward the steering device and the rider's arms extend toward the steering device with the rider's elbows substantially over the rider's feet. Also, claim 46 defines a line passing through the steering position and the seat position that forms an angle Φ (phi) with horizontal that is between 15 and 51 degrees. This angle is unique since the seat and steering positions have been moved forwardly as compared to conventional snowmobiles. Claim 46 also specifies that the seat is dimensioned to support a standard rider in a standard riding position in which the rider straddles the seat and the rider's thighs are parallel to ground while the snowmobile

is heading straight ahead on flat terrain. This configuration is unique and allows the rider to assume a more active riding position as compared to the passive riding position associated with conventional snowmobiles. Claims 47-49 define the angle Φ (phi) in more specific terms.

35. Claim 55 defines a snowmobile wherein a line between the steering position and the seat position form an angle μ (mu) with a line between the seat position and the top of the windshield that lies between 10 and 20 degrees. That range of angles is unique since the seat has been moved forwardly as compared to conventional snowmobiles. The recited structure is advantageous because the rider's head is not within the turbulent flow, thus improving comfort and ride, and/or the size of the windshield can be reduced compared to conventional windshields to produce similar results. In my view, it would not have been obvious to have modified Marier to result in the claimed range because impermissible hindsight would be required to either move the seat forward or to have lowered the windshield. Movement of the seat to a more forward position in the REV "changed longstanding ergonomic rules common to all current snowmobilers." See Exhibit C, page 23. Claim 57 defines an even more advantageous angle μ of 18 degrees.

36. Claim 60 recites a snowmobile wherein the snowmobile has a center of gravity without a rider and the steering device is disposed on the frame forward of the center of gravity, and wherein the forward-most axle is positioned forward of the center of gravity and rearward of a rearward-most portion of the steering device such that the center of gravity is rearward of the rearward-most portion of the steering device.

37. Claim 61 recites a snowmobile wherein the snowmobile is adapted to have a center of gravity with a rider in the standard position such that the steering device and the forward-most drive axle are disposed on the frame forward of the center of gravity, and such that

the forward-most drive axle is positioned rearward of a rearward-most portion of the steering device so that the center of gravity is rearward of the rearward-most portion of the steering device.

38. Claims 60 and 61 directly relate to the positioning of the center of gravity of the snowmobile (without the driver) in relation to the steering device and the forward-most drive axle mounted on the frame. Specifically, positioning the center of gravity of the snowmobile rearward of the steering position helps provide good dynamic stability because the rider's center of gravity is then closer to the center of gravity of the snowmobile. In my view, it would not have been obvious to have re-arranged Preble to adopt the claimed structure because to do so would have required a complete reconfiguration of Preble's parts to achieve what would only be marginal benefits, if any, for that particular snowmobile structure.
39. Claim 73 relates to a snowmobile including right and left sideboards extending laterally from the frame below the seat on either side thereof, each of the sideboards having a forward portion suitable for placement of a rider's foot thereon, the forward portion of each sideboard disposed at an angle Δ with horizontal that is -5° . See also claims 85 and 86.
40. The angle Δ effectively results in a configuration in which the rider's toes are toe down, rather than toe up, as is the case with most conventional snowmobiles. This "toe down" configuration is really the result of reconfiguring the snowmobile such that the position of the rider is more forward as compared to the position of riders on conventional snowmobiles. When the seat of the snowmobile is moved forward, and the steering device is moved forward, the natural tendency is for the rider's feet to shift back so as to assume the toe down position, in which the rider can more actively take on rugged terrain

by flexing at the knees, rather than relying on the arms, as is the case with conventional snowmobiles. The angle Δ allows the rider to more easily raise himself off the seat to overcome obstacles. Trautwein has no appreciation for these problems or advantages.

41. Claim 73 also recites right and left toe-holds disposed respectively above the rider's toes in a vertical plane for allowing the rider to releasably secure himself to the snowmobile. The forward-most surface in Trautwein, which is forward of each of the rider's toes, does not amount to a toe hold disposed above the rider's toe. Nor does the Trautwein surface allow the rider to releasably secure himself to the snowmobile, as claimed. In my opinion, Trautwein discloses no "toe-hold" whatsoever, as that term is commonly understood in the snowmobile art. See also claim 86.

42. Claim 84 relates to a snowmobile in which a distance between a vertical line passing through the first center of gravity (of the snowmobile without the rider) and a vertical line passing through the second center of gravity (of the snowmobile with the rider) is between 0cm and 14cm. By minimizing the differential between the horizontal distances, dynamic handling is improved and the rider is located closer to the snowmobile's center of gravity, which improves comfort by minimizing the effect of bumps on the rider. See also claim 87.

43. Claim 85 relates to a snowmobile having a center of gravity without the rider. The snowmobile includes frame including a pair of footrests each defining a forward-most surface and a tunnel defining an upper-most surface. A forward-most drive track axle is disposed on the frame forward of the pair of footrests and forward of the center of gravity. An angle between a line passing through the forward-most drive track axle and the center of gravity and a horizontal line passing through the forward-most drive track axle is less than 55 degrees. The center of gravity is positioned below the upper-most surface of the

tunnel, which is in contrast to conventional snowmobiles where the center of gravity is above the tunnel. See Figure 5 of the present application. The center of gravity is positioned in substantial alignment with the forward-most surface of each of said pair of footrests. Accordingly, the rider's feet are more vertically aligned with the center of gravity of the rider, which improves handling.

44. Claim 92 recites an assembly comprising a frame including a tunnel; a straddle seat mounted on the frame; an engine disposed on the frame in front of the seat; and two skis disposed on the frame; a steering shaft operatively connected to the two skis, the steering shaft being disposed over the engine at an angle ϵ of between 25° and 40° from vertical. Selection of the angle in this range is steeper than on conventional snowmobiles, and is advantageous because the turning force applied by the rider is more directly applied to steer the vehicle, and because it facilitates placement of the steering position in a position forward of that for a conventional snowmobile. The tunnel supports a drive belt coupled to the engine and defines a footrest on each side of the seat that is inclined at an angle Δ with horizontal that is between 0° to -5° , and a forward-most axle of the drive belt is positioned rearward of the steering device.
45. Claim 88 depends from claim 40 and recites a tunnel and an endless drive track housed within the tunnel. The endless drive track is operatively coupled to the engine. The tunnel is shown, for example, in Figures 5-18.
46. In my view, it would not have been obvious to have provided Yasui with a tunnel, as recited in claim 88. In fact, Yasui's vehicle, which is commonly known in the industry as the Snoscoot, is not regarded as a snowmobile generally because of its miniature size. "Yamaha doesn't even refer to this wild-looking, small machine as a snowmobile . . . it's a snow vehicle, that is, a design all to itself." In fact, the Snoscoot was specifically

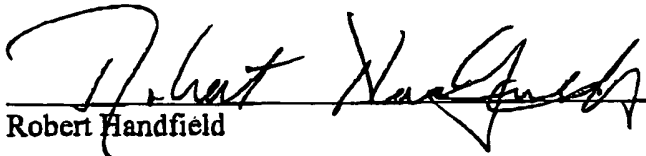
designed without a tunnel, probably due to its small size. "There is no tunnel as such. Instead, the track and skidframe are protected by a plastic guard." See Exhibit K, Snowmobile Business, "Introducing The Best Selection Of New Models Ever", 1988.

47. My understanding is that the claims in the above-identified application are rejected under 35 U.S.C. §112, first paragraph, based on the depicted relationship between the steering wheel and the windshield. In particular, the position of the Patent Office is that the application does not teach one of ordinary skill in the art how to make a steerable snowmobile, since the handlebars are shown in a position very close to the windshield.
48. My reaction to this position is that the drawings provided with the original application were schematic in nature. In fact, Figure 2 is much like the schematic figure shown on page 42 (bottom, middle) of Exhibit C. However, these schematic drawings are sufficient to teach one of ordinary skill in the art how to make a snowmobile with operable and cooperating steering and windshield assemblies. Stated differently, one of ordinary skill in the art would not have added a windshield to a snowmobile in a position that would destroy the ability to steer. In fact, the specification of the above-identified application teaches the exact range of angles between the top of the windshield and the seating position that are most desirable. See, for example, page 13, line 20 to page 14, line 6 and Figure 2. Moreover, it is not necessary to provide the snowmobile with a windshield, if that extra comfort is not desired. Figure 4 shows this embodiment. Also, the steering device could be a yoke or a steering wheel, which would work with the embodiment of Figure 2. As a further alternative, the steering device and windshield could move in

unison, in which case the embodiment of Figure 2, even with handlebars, would be operable.

49. I hereby declare that all statements made herein of my knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statement and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code and that such willful false statement may jeopardize the validity of the application or any patents issued from them.

Signed this 4 day of July, 2002, at Valerost.


Robert Handfield